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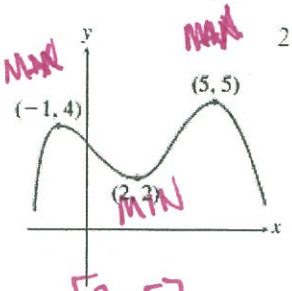
Precalculus Name: Key Date: _____

In exercises 1 – 4 identify the intervals that function increases, decreases or is constant, also state whether the identified points are a maxima, minima or neither. Determine if the function is continuous or not.

1.



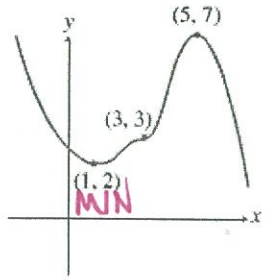
Increasing: $[2,5]$ $(-\infty, -1]$

Decreasing: $[-1,2]$ $[5,\infty)$

Constant: —

Continuous: Y or N

2.



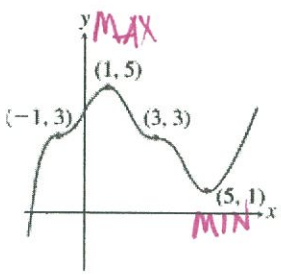
Increasing: $[1,5]$

Decreasing: $(-\infty,1]$, $[5,\infty)$

Constant: —

Continuous: Y or N

3.



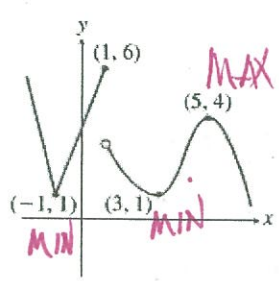
Increasing: $(-\infty,1]$ $[5,\infty)$

Decreasing: $[1,5]$

Constant: —

Continuous: Y or N

4.



Increasing: $[-1,1]$ $[3,5]$

Decreasing: $(-\infty,-1)$, $(1,3]$ $[5,\infty)$

Constant: —

Continuous: Y or N

In exercises 5 – 12 determine if the function is even, odd or neither. Support your answer with algebraic justification.

5. $f(x) = 5x^2$

$f(-x) = 5(-x)^2 = 5x^2$ even

6. $f(x) = -2x^3$

$f(-x) = -2(-x)^3 = 2x^3$ ODD

7. $f(x) = \frac{x}{x^2+2}$

even

$f(-x) = \frac{-x}{(-x)^2+2} = \frac{-x}{x^2+2}$

Neither

8. $f(x) = \frac{3}{1+x^2}$

$f(-x) = \frac{3}{1+(-x)2} = \frac{3}{1+x^2}$

even

9. $f(x) = -x^2 + 0.5x + 7$

$f(-x) = -(x)^2 + 0.5(-x) + 7$

$-x^2 - 5x + 7$

Neither

10. $f(x) = x^3 + 4x^2 + 1$

$f(-x) = (-x)^3 + 4(-x)^2 + 1$

$= -x^3 + 4x^2 + 1$

Neither

11. $f(x) = 3x^3 - 4x$ ODD

12. $f(x) = \frac{1}{x^2}$ even

In exercises 13 – 19 Find all of the vertical asymptotes of the function.

13. $f(x) = \frac{3}{x-5}$ V.A $x = 5$

14. $f(x) = \frac{x-4}{x}$ V.A. $x = 0$

15. $f(x) = \frac{x+2}{3-x}$ V.A. $x = 3$

16. $f(x) = \frac{x^2}{x^3+1}$ V.A. $x = -1$

17. $f(x) = \frac{x^2+2}{x^2-1}$ V.A. $x = \pm 1$

18. $f(x) = \frac{4}{x^2+1}$ NO V.A.

19. $f(x) = \frac{4x-4}{x^3-8}$ V.A. $x = 2$

20. $f(x) = \frac{7}{2x-1}$ V.A. $x = \frac{1}{2}$